Making Cents of China: A Case Study in TCO (Total Cost of Ownership)

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Abstract. Are you aware of the total cost implications of outsourcing from overseas, from suppliers located in the People's Republic of China and India? Most companies are unaware of the total cost of ownership. They are fixated on the direct cost savings, often quite sizeable and attractive, offered by purchasing their products from companies located in these countries. Consequently, these firms overlook the other costs triggered by these purchases. These costs are frequently hidden in the overhead; they tend to accumulate gradually over time. In many cases, these hidden costs more than offset any cost savings offered by the overseas purchase. Through the workshop, we will explore the challenges and opportunities present when outsourcing from overseas and demonstrate the need for procurement professionals to better manage costs through improved and more focused measures and through appropriate unbundling of costs. We will present guidelines and procedures aimed at uncovering the true total cost of a purchase. As will be shown, in many cases, going overseas may not be the "right" decision from a total cost perspective.

The Situation. Before discussing the application of the Total Cost of Ownership (TCO) tool, it is first necessary to understand the setting in which it was applied. This tool was applied to assess the total costs incurred by the decision of a large North American-based multinational corporation to outsource some of its items to China. Initially, management had expected that there would be some "teething" costs. Yet, after over five years into this decision, there was concern regarding the extent to which the anticipated benefits had been realized and what other unanticipated (hidden) costs had been incurred. These concerns had been triggered by several factors. First, the direct cost savings were not as strong as anticipated. Second, lead times were increasing. Third, there was anecdotal evidence that indicated that this decision may have created some unanticipated problems. For example, in one case, parts were sent from North America for processing in China, processed, sent back to North America and then returned to China for some final work. This type of a flow did not bode well for lower costs. Consequently, it was decided to take another "look" at this decision.

TCO background. Prior to the TCO "Pilot", the company did not have a formal tool in place to uncover the true total costs; acquisition, ownership and post-ownership of outsourcing; the cost of incoming inspection, transportation costs (and the changes in this cost as a result of changes in fuel prices), material handling, lead time, inventory storage costs, quality, warranty and rework to name a few. Purchasing management became aware that a formal tool was needed.

The tool had to achieve certain desired outcomes. First, it had to be user friendly. Second, it had to be measurable in objective, quantitative terms that were meaningful to the participants, and it had to relate directly to and be supportive of the company's strategic objectives. Third, it had to be dynamic in its application. That is, while the tool identified specific acquisition costs, it had to be sufficiently flexible as to allow the participants to modify cost drivers to fit their needs. Finally, it had to be simple – simple to understand, simple to apply, simple to teach, simple to measure, simple to implement. In focusing on developing a tool that met these objectives, the result was the TCO "Pilot" Model.

What is TCO? Total Cost of Ownership can be defined as a holistic view of all costs, to include both direct and indirect, involved with an item over the useful life of that item usually divided into three categories; Acquisition Costs, Ownership Costs and Post-Ownership Costs. As U.S. companies continue to pursue global sourcing strategies, a number of tools are available to facilitate sourcing decisions. Companies must shift their focus in procurement from price to total cost. Total Cost of Ownership is a powerful tool that can be used to facilitate dynamic decision making over time. TCO is a powerful tool provided that the data it requires is readily available, the data is "clean" and one is are able to decompose the factors that influence purchasing decisions.

Benefits of TCO

The benefits of TCO include: (1) Provide a consistent supplier evaluation tool to improve validity of supplier performance in comparison to other suppliers; (2) Help clarify and define supplier performance expectations; (3) Provide a focus and setting of priorities regarding which performance areas would be of most benefit for improvement; (4) Improve procurement's understanding of supplier performance issues and cost structures; (5) Provide excellent data for negotiations; (6) Provide an opportunity to justify higher costs based on improved quality resulting in lower long-run total cost; and (7) Provide a long-term purchasing orientation by emphasizing the TCO, rather than price alone. Applying TCO provides souring decision validation using full information to determine if a company should in-source, out-source or offshore.

What's involved in TCO? Critical to a TCO analysis is unbundling costs, identifying critical cost drivers and ease of data retrieval and data integrity. The TCO may include tariffs, duties, expedited freight, supply chain interruptions (natural disasters, political instability), incoming inspection, inventory risk, foreign regulations, and analysis of tier two or three suppliers. Often, challenges are presented due to lack of data, data integrity, availability of real time data and ease of data retrieval, yet sourcing decisions are made without full information. Application of the TCO model should be easy and accurate and may require a cultural shift in the organization from focusing on price to total cost. The model can be automated or semi-automated and may begin as a simple Excel spreadsheet that migrates to tying into the Enterprise Resource Planning System.

Objectives. Our objective is to present a practical TCO model for procurement professionals to apply to gain an understanding of all costs related to doing business with a particular supplier. The TCO model assists in determining the TCO for in-sourcing, out-sourcing or off-shoring to ensure the sourcing decision is made using full information and based on a total cost perspective.

Lessons Learned. Several important lessons had been learned as a result of the application of the TCO tool. The first and most obvious is that such a tool does work and it can provide insight into costs not previously possessed. The second is that most information systems (especially accounting information systems) are not appropriately organized to support the implementation and use of a system such as TCO. Much of the data needed for a complete TCO is often not collected. If it is collected, then it is often part of a category such as overhead (from which it is difficult to disaggregate). The TCO experience made the management team more aware of the need to better structure data collection activities. Consequently, one emergence from this exercise was that of "unbundling the overhead." Finally, the team saw the need to portray the opportunities exposed by the TCO as due to the process, and not to management. Without this orientation, management could be expected to be adversely oriented towards the TCO exercise. Consequently, we rediscovered the importance of Juran's Law: "Whenever a problem occurs, 85 percent of the time it caused by the process; 15 percent of the time it is due to the people involved."

Impact. The "Pilot" TCO identified that the company should move product back to the U.S. for internal manufacturing as well as identified an opportunity to outsource a component domestically versus overseas. These efforts resulted in annual savings of $490,000.